

## CLAIMS

1. Method for simulating a communications network through objects (13) that model respective network devices, the method including the step of simulating  
5 through said objects (13) the supply of network services according to respective Quality of Service (QoS) profiles, characterised in that it comprises the steps of:

- selectively identifying at least one Quality of  
10 Service profile (41 to 46), and

- dynamically configuring said objects (13) to simulate the supply of the service corresponding to said selectively identified Quality of Service profile (41 to 46).

15 2. Method according to claim 1, characterised in that it comprises the step of inserting, for at least one network user (TMi, TMj; 22, 32), a respective parameter (QoSparams) related to a particular respective Quality of Service profile.

20 3. Method according to claim 2, characterised in that it comprises the steps of:

- selectively associating to a plurality of network users (TMi, TMj; 22, 32) respective Quality of Service profiles, and

25 - performing at least one simulation in which every simulated user uses a different service from that used by other users of said plurality.

4. Method according to claim 1, applied for simulating networks comprising mobile terminals (TMi, TMj), characterised in that said Quality of Service  
30 profile comprises parameters chosen from the group composed of:

- traffic class,
- maximum transfer time of a data unit,

- guaranteed transfer speed for data transmitted by mobile terminal (TMi, TMj) towards the network,
- maximum transfer speed for data transmitted from mobile terminal (TMi, TMj) towards the network,
- 5       - guaranteed transfer speed for data transmitted by the network towards mobile terminal (TMi, TMj), and
- maximum transfer speed for data transmitted by the network towards mobile terminal (TMi, TMj).

5. Method according to claim 2, applied for  
10       simulating networks comprising mobile terminals (TMi, TMj) connected through radio interfaces to a switching centre (22), said mobile terminals and said switching centre comprising respective control modules (21a, 22a) of calls characterised in that, in case of simulation  
15       of a Circuit Switching (CS) call originated from mobile terminal (TMi, TMj), the method comprises the step of directly sending said parameter (QoSparams) from said control module (21a) of the mobile terminal towards the control module (22a) of the switching  
20       centre (22b) in view of the forwarding of said parameter (QoSparams) to modules of the related radio interfaces that start the connection according to the type of service pointed out in said parameter.

6. Method according to claim 2, applied for  
25       simulating networks comprising mobile terminals (TMi, TMj) connected through radio interfaces to a network node (32), said mobile terminals and said network node comprising respective modules for managing the mobile terminal (31a) session and for managing the support  
30       node (32b) session, characterised in that, in case of simulation of a Packet Switching (PS) call originated from mobile terminal (TMi, TMj), the method comprises the step of directly sending said parameter (QoSparams) from said module for managing the mobile terminal (31a)  
35       session towards said module for managing the support

node (32b) session in view of the forwarding of such parameter (QoSparams) to the modules of the related radio interfaces that start the connection according to the type of service pointed out in said parameter.

5        7. Method according to claim 2, applied for simulating networks comprising mobile terminals (TMi, TMj) cooperating with blocks (22, 32) responsible for starting the connection, characterised in that, in case of simulation of a call originated from a terminal,  
10       said parameter (QoSparams) is specified by said terminal to said blocks (22, 32) during the procedure for starting the connection.

      8. Method according to claim 2, applied for simulating networks comprising mobile terminals (TMi,  
15       TMj) cooperating with blocks (22, 32) responsible for starting the connection, characterised in that, in case of simulation of a terminated call towards a determined network terminal, comprises the step of taking said parameter (QoSparams) from the terminal object of the  
20       call, said taking step being performed by said blocks responsible for starting the connection.

      9. Method according to claim 1, applied for simulating networks comprising mobile terminals (TMi, TMj) cooperating with network devices, characterised in  
25       that it comprises, in case of simulation of terminated call on a mobile terminal (TMi, TMj), the step of sending the indication of connection start beginning from simulated network devices (22, 32) omitting the indication of what Quality of Service profile to use  
30       and obtaining said profile from the mobile terminal (TMi, TMj) to which the call is directed.

      10. System for simulating a communications network through objects (13) that model respective network devices, in which said objects (13) simulate the supply  
35       of network services according to respective Quality of

Service (QoS) profiles, characterised in that said objects (13) are dynamically configurable to simulate the supply of services corresponding to selectively identified Quality of Service profiles (41 to 46).

5        11. System according to claim 10, characterised in that, for at least one network user (TMi, TMj; 22, 32), a respective parameter is defined (QoSparams) related to a particular respective Quality of Service profile.

10        12. System according to claim 11, characterised in that:

      - respective Quality of Service profiles are associated to a plurality of users of the simulated network (TMi, TMj; 22, 32), and

15        - the system is configured for performing at least one simulation in which every simulated user uses a different service from that used by other users of said plurality.

20        13. System according to claim 10, for simulating networks comprising mobile terminals (TMi, TMj), characterised in that said Quality of Service profile comprises parameters chosen from the group composed of:

      - traffic class,  
      - maximum transfer time of a data unit,  
      - guaranteed transfer speed for data transmitted  
25        by mobile terminal (TMi, TMj) towards the network,  
      - maximum transfer speed for data transmitted from mobile terminal (TMi, TMj) towards the network,  
      - guaranteed transfer speed for data transmitted by the network towards mobile terminal (TMi, TMj), and  
30        - maximum transfer speed for data transmitted by the network towards mobile terminal (TMi, TMj).

      14. System according to claim 11, for simulating networks comprising mobile terminals (TMi, TMj) connected through radio interfaces to a switching  
35        centre (22), said mobile terminals and said switching

centre comprising respective control modules (21a, 22a) of calls characterised in that, in case of simulation of a Circuit Switching (CS) call originated from a mobile terminal (TMi, TMj), the system is configured  
5 for directly sending said parameter (QoSparams) from said control module (21a) of the mobile terminal towards the control module (22a) of the switching centre (22b) in view of the forwarding of said parameter (QoSparams) to modules of the related radio  
10 interfaces that start the connection according to the type of service pointed out in said parameter.

15 15. System according to claim 11, for simulating networks comprising mobile terminals (TMi, TMj) connected through radio interfaces to a network node (32), said mobile terminals and said network node comprising respective modules for managing a mobile  
terminal (31a) session and for managing a support node (32b) session, characterised in that, in case of simulation of a Packet Switching (PS) call originated  
20 from a mobile terminal (TMi, TMj), the system is configured for directly sending said parameter (QoSparams) from said module for managing the mobile terminal (31a) session towards said module for managing the support node (32b) session in view of the  
25 forwarding of said parameter (QoSparams) to the modules of the related radio interfaces that start the connection according to the type of service pointed out in said parameter.

30 16. System according to claim 11, for simulating networks comprising terminals (TMi, TMj) cooperating with blocks (22, 32) responsible for starting the connection, characterised in that, in case of simulation of a call originated from a terminal, the system is configured for specifying said parameter

(QoSparams) from said terminal to said blocks (22, 32) during the procedure for starting the connection.

17. System according to claim 11, for simulating networks comprising terminals (TMi, TMj) cooperating  
5 with blocks (22, 32) responsible for starting the connection, characterised in that, in case of simulation of a terminated call towards a certain network terminal, the system is configured for taking  
10 said parameter (QoSparams) from the terminal object of the call, said taking being performed by said blocks responsible for starting the connection.

18. System according to claim 10, for simulating networks comprising mobile terminals (TMi, TMj) cooperating with network devices, characterised in  
15 that, in case of simulation of terminated call on a mobile terminal (TMi, TMj), the system is configured for sending the indication of connection start beginning from simulated network devices (22, 32) by  
20 omitting the indication of what Quality of Service profile to use and by obtaining said profile from the mobile terminal (TMi, TMj) to which the call is directed.

19. Object (13) for simulating the supply of network services according to respective Quality of  
25 Service (QoS) profiles in a simulating system (13) according to any one of claims 10 to 18, characterized in that it is able to be dynamically configured to simulate the supply of services corresponding to  
30 selectively identified Quality of Service profiles (41 to 46).

20. Communications network resulting from the application of the method according to any one of claims 1 to 9.

21. Computer program product loadable in a memory  
35 of at least one electronic computer and comprising

portions of software code to perform the method according to any one of claims 1 to 9.